



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/821,792

04/09/2004

Alice Parisis

F40.12-0026

9347

27367 7590 02/29/2008  
WESTMAN CHAMPLIN & KELLY, P.A.  
SUITE 1400  
900 SECOND AVENUE SOUTH  
MINNEAPOLIS, MN 55402-3319

EXAMINER

REDDING, THOMAS M

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

02/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/821,792

Applicant(s)

PARISIS ET AL.

Examiner

Thomas M. Redding

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 17-22, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 4-16 and 23-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____                                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/12/2005 and 1/19/2006</u> .                                 | 6) <input type="checkbox"/> Other: ____                           |

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because it has a title. Correction is required. See MPEP § 608.01(b).

(b) A brief abstract of the technical disclosure in the specification must commence on a separate sheet, preferably following the claims, under the heading "Abstract" or "Abstract of the Disclosure." The sheet or sheets presenting the abstract may not include other parts of the application or other material. The abstract in an application filed under 35 U.S.C. 111 may not exceed 150 words in length.

The purpose of the abstract is to enable the United States Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure. (MPEP § 608.01(b))

2. The disclosure is objected to because of the following informalities:

Page 18, line 4, the word "sued" is probably intended to the word "used".

Pages 25 and 26 in reference to figure 2, the text describes  $\tilde{H}$  and  $\tilde{G}$ , but these symbols do not appear in figure 2. Error is probably in the drawing.

Appropriate correction is required.

### *Claim Objections - 37 CFR 1.75(a)*

1. The following is a quotation of 37 CFR 1.75(a):

The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

2. Claims 1, and 3 are objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery.

Claim 1 refers to "three components" in the preamble, and refers to "said components" on line 7. This wording is vague and for purposes of examination the claim will be presumed to read "said component color vectors".

Claim 3 recites "said vector to be marked is central vector, positioned between said reference vectors". This statement is problematic first as it is unclear how many dimensions each vector has. If 2 dimensional, the remainder of the claim would be sufficiently clear. If the vectors are 3 dimensional, as implied by the specification, then determining which vector falls between the other two is affected by the viewpoint of the observer.

Corrections are required.

3. Claims 9 and 25 are objected to because of the following informalities:

Claim 9 appears to have an incomplete edit. The word "any" at the end of the first line does not make sense in context.

Claim 25, line 2 recites "said mark is recuperated at least twice". Recuperated is an unusual choice of word in this context. Suggest changing the word to "recovered".

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 20 and 27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Both claims 20 and 27 define a computer program comprising program code instructions saved on a support embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for

that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

"A transitory, propagating signal ... is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter." (*In re Petrus A.C.M. Nuijten*; Fed Cir, 2006-1371, 9/20/2007).

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM,

etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc.

4. The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. Sec. 101. Certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture or composition of matter. USPTO personnel should be prudent in applying the foregoing guidance. Nonfunctional descriptive material may be claimed in combination with other functional descriptive multi-media material on a computer-readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 U.S.C. Sec. 101. The presence of the claimed nonfunctional descriptive material is not necessarily determinative of nonstatutory subject matter. For example, a computer that recognizes a particular grouping of musical notes read from memory and upon recognizing that particular sequence, causes another defined series of notes to be played, defines a functional interrelationship among that data and the computing processes performed when utilizing that data, and as such is statutory because it implements a statutory process.

Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 21 recites a color image which does not impart functionality to a computer or computing device, and is thus considered nonfunctional descriptive material. Such nonfunctional descriptive material, in the absence of a functional interrelationship with a computer, does not constitute a statutory process, machine, manufacture or composition of matter and is thus non-statutory per se.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 1-3, 18-22, 26 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Reed et al. (US 2002/0067844).

Regarding claims 1, 19, 20 and 21 Reed working in the same field of endeavor of watermarking color images ("FIG. 3b illustrates the color data of FIG. 3a, embedded with a digital watermark signal", Reed, paragraph 17) discloses a [m]ethod of watermarking a color image that has at least three components, characterized in that it comprises an insertion step of a mark of watermarking, on at least one point of the image, according to an insertion rule taking into account the relative position of at least three component vectors, for each of said components respectively, associated to said



at least one point ("Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media", Reed, paragraph 59, Reed's method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components).

Further regarding claim 19, Reed discloses a [d]evice for watermarking a color image that implements the elements in common with claim 1 ("Such software may be stored and executed on a general purpose computer, or on a server for distributed use", Reed, paragraph 111, Reed teaches his system can be implemented on a computer).

Further regarding claim 20, Reed discloses a [c]omputer program comprising program code instructions saved on a support that can be used in a computer to watermark a color image that implements the elements in common with claim 1 ("The above-described methods and functionality can be facilitated with computer executable software stored on computer readable media, such as electronic memory circuits, RAM, ROM, magnetic media, optical media, memory sticks, hard disks, removable media, etc., etc.", Reed, paragraph 111).

Further regarding claim 21, Reed discloses a [c]olor image having at least three components and comprising a watermarking as described by elements in common with claim 1 ("Media is embedded with a watermark signal. Of course, the media may correspond to a digital image or photograph, video frame, graphic, picture, etc., and in some cases, may even include a physical object such as a picture, graphic, image, photograph, graphic, logo, product tag, business card, art work, document, product packaging, trading card, banknote, deed, document, poster, ID card, postage stamp, etc., etc.", Reed, paragraph 59).

Regarding claim 2, Reed discloses a [m]ethod of watermarking set forth in claim 1, characterized in that for each of said related points, two vectors are selected as reference vectors and one vector to be marked in order to bear said mark of watermarking ("a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image", Reed, paragraph 50, and "Luminance, color component "a" and color component "b" (Lab), can be combined to uniquely identify a particular color", Reed, paragraph 55, Reed teaches encoding a watermark in Luminance, and if the Lab color space is used, the watermark signal would be encoded in the luminance axis, "By using the scale to white method for colors with high yellow content such as yellow, red and green, and scale to black for blue, cyan and magenta a lower visibility watermark can be encoded with the same detectability", Reed, paragraph 52, Reed teaches adjusting luminance in reference to the original color).

Regarding claim 3, Reed teaches a [m]ethod of watermarking set forth in claim 2, characterized in that said vector to be marked is a central vector, positioned between said reference vectors ("The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, Reed teaches adjusting the luminance component, if the Lab color plot is viewed with the ab plane on the horizontal, and sighting down the a=b line toward the origin, the luminance vector will appear between the two color vectors).

Regarding claim 18, Reed teaches a [M]ethod of watermarking set forth in claim 1, characterized in that said components belong to the group comprising:

- the RGB components;
- the YUV components;
- the CMY components ("The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50).

Regarding claim 22, Reed discloses a [m]ethod for detecting a watermarking in a marked watermarking, performed according to claim 1, characterized in that it comprises a recovering step of a mark of watermarking, in at least one point of the image, according to a recovering rule taking into account the relative position of the at least three component vectors, for each of said components respectively, associated to

said at least one point ("The step S11 subtraction operates to help reduce image content, and to reinforce the watermark signal by effectively adding the K watermark signal value to the CMY watermark signal, since the K watermark signal is the inverse of the CMY channel signals", Reed, paragraph 67, Part of Reeds detection method involves reinforcing the watermark signal).

Regarding claim 26, Reed teaches a [d]evice for detecting a watermarking in a watermarked image ("The media is illuminated with an infrared illumination source, and a digital camera captures an image of the media. Preferably, the camera includes an IR-pass filter with characteristics as shown in FIG. 15. The digital camera communicates with a computing device, which detects and decodes an out-of-phase digital watermark embedded in the media.", Reed, paragraph 77), performed according to claim 1, characterized in that it comprises means of recovering a mark of watermarking, in at least one point of the image, according to a recovering rule taking into account the relative position of at least three component vectors, for each of said components respectively, associated to said at least one point ("Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media", Reed, paragraph 59, Reed's method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel

color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components).

Regarding claim 27, Reed teaches a computer program comprising program code instructions saved on a support that can be used in a computer to detect a watermarking in a watermarked image, performed according to claim 1, characterized in that said program comprises means of programming that are readable by a computer in order to carry out a recovering step of a mark of watermarking ("The captured image is communicated to computer 14. Preferably, computer 14 includes executable software instructions to detect and decode the digital watermark embedded within media 1. The software instruction can be stored in memory or electronic memory circuits. Of course, computer 14 can be a handheld computer, a laptop, a general-purpose computer, a workstation, etc", Reed, paragraph 72),

in at least one point of the image, according to a recovering rule taking into account the relative position of at least three component vectors, for each of said components respectively, associated to said at least one point ("Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media", Reed, paragraph 59, Reed's method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel

color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 2002/0067844) in combination with Alattar, "'Smart Images' Using Digimarc's Watermarking technology").

Regarding claim 17, Reed teaches a [m]ethod of watermarking set forth in claim 1. Reed does not teach that said mark is a pseudo-random binary signature written in a redundant manner.

Bradley, working in same area of endeavor of Digital Watermarking in images, does teach said mark is a pseudo-random binary signature written in a redundant manner ("Also, let  $K(n) \{k_1, k_2, \dots, k_L\}$  be a set of  $L$  pseudo-random binary keys, where  $k_i \in \{-1, 1\}$  and  $J \times L = N \times M$ . Each of these keys is associated with one of the bits in the error-protected watermark,  $W(n)$ . These random keys are first used to spread each of

the bits of the watermark signal,  $W(n)$ , to produce  $((n)$ , which is a vector of length  $J$ ", Alattar, page 267, paragraph 1).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to use the Pseudo-random binary keys of Alattar in the watermarking system of Reed to "make the signal imperceptible and to combat the effect of image manipulation and filtering" (Alattar, page 267, paragraph 1).

***Allowable Subject Matter***

9. Claims 4-16 and 23-25 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the respective base claims and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter in the claims listed above:

Regarding claims 4 as well as claims 5-9, 14 and 15 which depend therefrom, and claim 23 as well as claim 24 which depends therefrom, the prior art of record does not teach selecting reference vectors by calculating the distance between any two vectors of at least three vectors and defining reference vectors as the two vectors furthest away from each other.

Regarding claim 10 as well as claim 16 which depends therefrom, the prior art of record does not teach transforming each of three component vectors associated with a point in a color image into wavelets.

Regarding claim 11 as well as claims 12 and 13 which depend therefrom, the prior art of record does not teach providing two marking agreements for a vector.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas M. Redding whose telephone number is (571) 270-1579. The examiner can normally be reached on Mon - Fri 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.




Application/Control Number:  
10/821,792  
Art Unit: 2624

Page 16

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TMR/



VIKKRAM BALI  
PRIMARY EXAMINER